

# CHAPTER I

## INTRODUCTION

### BACKGROUND

The Federal Highway Administration (FHWA) has the responsibility to assure that adequate highway transportation information is available to support its functions and responsibilities, including those of the Administration and the Congress. The primary purpose of the Highway Performance Monitoring System (HPMS) is to serve these data and information needs. The HPMS provides data that reflects the extent, condition, performance, use, and operating characteristics of the nation's highways.

The provision of HPMS data is a cooperative effort with state highway agencies (SHAs), local governments and metropolitan planning organizations (MPOs) working in partnership to collect, assemble, and report the necessary information. In consultation with its HPMS partners, stakeholders, and customers, FHWA has identified the data to be reported and has provided data definitions and standards. FHWA has developed and maintains PC-based data submittal software and analytical models and techniques that FHWA and a number of States use with the HPMS data to do policy sensitive system, corridor, and subarea planning and programming. Taken together, these activities support informed highway planning, policy making, and decision making at the national, state, and local levels.

### CONTENTS OF THE HPMS FIELD MANUAL

Chapter I provides general information on the background, scope, and major uses of the HPMS, provides an overview of reporting requirements and introduces the sampling concept. Chapters II through VII provide more specific information on submittal requirements and the major components of an HPMS submittal:

Chapter II	Data definitions
Chapter III	Reporting summary data
Chapter IV	Data item coding instructions
Chapter V	Linear Referencing System (LRS) reporting requirements
Chapter VI	Data update cycles
Chapter VII	Sample selection and maintenance

Additional detailed information on specific data coding, sample selection, and technical procedures and requirements are included in Appendices A through N. These appendices should be consulted by those collecting and reporting HPMS data for explanation of specific requirements, techniques, or procedures to be used in developing the HPMS data set for FHWA.

## USES OF HPMS DATA

Length, lane-mile, and travel data are used for apportionment of Federal-aid highway funds under the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). HPMS data are also used for assessing and reporting highway system performance under FHWA's strategic planning process. HPMS data form the basis of the analyses that support the Condition and Performance Reports to Congress and are the source for a substantial portion of the information published in *Highway Statistics* and in other FHWA publications and media. Finally, the HPMS data are widely used throughout the transportation community, including other governmental interests, business and industry, institutions of higher learning, the media and general public. Table I-1 contains information on the source of selected length, lane-mile, and travel data from the HPMS data set.

**Table I-1. Sources of selected HPMS data**

HPMS Data	Rural Functional Systems					
	Interstate	Other Principal Arterials	Minor Arterial	Major Collector	Minor Collector	Local
Interstate Lane Miles Interstate VMT	Universe Universe					
Non-Interstate PAS Lane Miles Non-Interstate PAS VMT		Universe Universe				
FA Highway Lane Miles 1/ FA Highway VMT 1/	Universe Universe	Universe Universe	Universe Sample 2/	Universe Sample 2/		
NHS Lane Miles	Universe	Universe	Universe	Universe	Universe	Universe
Miles Lane Miles VMT	Universe Universe Universe	Universe Universe Universe	Universe Universe Sample 2/	Universe Universe Sample 2/	Universe Universe 3/ Summary 4/	Universe Universe 3/ Summary 4/
Total Public Road Miles	Certified Mileage -----					
HPMS Data	Urban Functional Systems					
	Interstate	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Collector	Local
Interstate Lane Miles Interstate VMT	Universe Universe					
Non-Interstate PAS Lane Miles Non-Interstate PAS VMT		Universe Universe	Universe Universe			

FA Highway Lane Miles 1/ FA Highway VMT 1/	Universe Universe	Universe Universe	Universe Universe	Universe Sample 2/	Universe Sample 2/	
NHS Lane Miles	Universe	Universe	Universe	Universe	Universe	Universe
Miles Lane Miles VMT	Universe Universe Universe	Universe Universe Universe	Universe Universe Universe	Universe Universe Sample 2/	Universe Universe Sample 2/	Universe Universe 3/ Summary 4/
Total Public Road Miles	Certified Mileage -----					

1/ Universe data are used to estimate lane-miles & VMT for the few miles of NHS that are on the minor collector & local functional systems.

2/ Expanded sample data are used.

3/ Universe miles times 2 (lanes) are used. States are not required to report number of through lanes on these systems.

4/ Summary data are used. States are not required to report section level AADT on these systems.

**Definitions:**

Universe: Data reported for all roadway links in the system.

Sample: Data reported for a randomly selected sample of roadway links in the system.

Summary: Data reported in aggregated form by functional system.

PAS: Principal arterial system made up of interstate, other freeways & expressways, and other principal arterial systems.

VMT: Vehicle miles of travel.

FA: Federal-aid.

NHS: National highway system.

Table I-2 provides information on how HPMS data are used in the Federal-Aid Highway Program apportionment formula.

**Table I-2. HPMS Data Used for Apportionment**

Fund	Factors	Weight
Interstate Maintenance	Interstate System Lane Miles	33 1/3 %
	Vehicle Miles Traveled on the Interstate System	33 1/3 %
National Highway System (NHS)	Lane Miles of Principal Arterial Highways (excluding Interstate System)	25 %
	Vehicle Miles Traveled on Principal Arterial Highways (excluding Interstate System)	35 %
	Total Lane Miles of Principal Arterial Highways divided by the State's Population	10 %
Surface Transportation Program (STP)	Lane Miles of Federal-Aid Highways	25 %
	Vehicle Miles Traveled on Federal-Aid Highways	40 %
Highway Safety Programs	State Population	75 %
	Public Road Miles	25 %

## SCOPE OF THE HPMS

The HPMS is a nationwide inventory system that includes data for **all** of the Nation's public road mileage as certified by the States' Governors on an annual basis. This includes facilities both on and off State-owned highway systems. Each State is required to furnish annually all data requirements specified in the *HPMS Field Manual*. The District of Columbia and the Commonwealth of Puerto Rico are considered to be States for HPMS reporting purposes. United States Territories (Guam, the Commonwealth of the Northern Marianas, American Samoa, and the Virgin Islands) are required to annually report limited HPMS summary data only in addition to public road mileage certifications.

## OVERVIEW OF HPMS REPORTING REQUIREMENTS

The HPMS is an integrated database that was developed in 1978 as a national highway transportation system database. It includes limited data on all public roads, more detailed data for a sample of the arterial and collector functional systems, and area wide summary information for urbanized, small urban and rural areas. The HPMS also requires the reporting of supplemental air quality non-attainment area sample data and LRS data for FHWA use in a geographic information system.

- The **statewide summary data** includes information on travel, system length, and vehicle classification by functional system and area type, in addition to land area and population by area type. The area types include rural, small urban, individual urbanized and the donut area of National Ambient Air Quality Standards (NAAQS) non-attainment areas.
- The term **universe data** refers to a limited set of data items reported for the entire public road system as individual or grouped length sections.
- **HPMS sample data** consists of data items added to the universe data that are reported for a small portion of the total highway system length. The sampled sections nominally are a fixed sample panel of highway sections that are monitored from year to year and, when expanded, represent the universe of the systems that are sampled. The more detailed information collected for a sample section is used to represent similar conditions on the associated functional system after expansion.
  - A **standard sample** contains the universe data plus additional data items related to the physical characteristics, condition, performance, use, and operation of the sampled sections of a highway. These sample data provide detailed information, which is used as the basis for evaluating change over time, and provides the basic input to the HPMS simulation models [Analytical Process (AP) and Highway Economic Requirements System (HERS)].
  - **Donut area samples** are unique in that their sole purpose is to enhance the precision of travel estimates in the area lying outside of the adjusted urbanized area(s) boundary but within the NAAQS non-attainment areas designated by the Environmental Protection Agency (EPA). Consequently, donut sample data item additions are limited to identification, annual average daily traffic (AADT) and an expansion factor. Donut area sample data are required only for those non-attainment areas using HPMS developed travel estimates for meeting EPA travel monitoring requirements.
- The HPMS LRS data provide a linear referencing system for the universe and sample data on selected highway functional systems. The represented functional systems include urban and rural principal arterials, rural minor arterials, and all National Highway System (NHS) routes and connectors. This permits the analyses of HPMS data in a geographic information system (GIS) environment.

The Manual contains reporting specifications for the various types of data in HPMS, a timetable for coordinating and updating the various data items and components of the HPMS, and information on maintaining the HPMS sample; information related to the use and maintenance of the HPMS submittal software is included in the software documentation. All HPMS data are to represent conditions as of December 31 of the data year. Since travel,

length, and lane miles are used to apportion funds, it is important that these data represent the entire calendar year. Each State is expected to make an annual submittal of HPMS data in accordance with the procedures, formats, and codes specified in this Manual. Each State should also assure that there is agreement between the Certified Public Road Mileage and the total length (kilometers or miles) reported to FHWA via HPMS. After the initial reporting of LRS data, only updated information is required on an annual basis.

Regulations governing the FHWA State Planning and Research (SPR) funded work programs [23 Code of Federal Regulations (CFR), Part 420] outline responsibilities for furnishing FHWA adequate information for administering the Federal-aid highway program. Maintaining a valid HPMS database is an item of national significance; items of national significance must be adequately addressed in each State's annual work program. This extends beyond the simple reporting of data each year and includes taking actions to assure that all data are complete, current, and accurate. Although there may be other participants in the collection and reporting process, the ultimate responsibility for the accuracy and timely reporting of HPMS data lies with the State highway agency.

The submission of false data is a violation of the United States Code (U.S.C.), Title 18, Section 1020.

**HPMS due date:** June 15<sup>th</sup> of the year following the data year.

**Send items that are in other than electronic format to:**

- FHWA Division Office
- Office of Highway Policy Information  
Attention: HPPI-20, Room 3306  
Federal Highway Administration  
400 Seventh Street, S.W.  
Washington, D.C. 20590

**Arrangements for delivery of items to be provided in electronic format should be made with the Office of Highway Policy Information and the Division Office on a State specific basis.**